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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,021

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Herbert Brunner

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EXAMINER

WALFORD, NATALIE K

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/574,021	<b>Applicant(s)</b> BRUNNER ET AL.	
	<b>Examiner</b> NATALIE K. WALFORD	<b>Art Unit</b> 2879	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/06, 7/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Objections***

Claim 7 is objected to because of the following informalities:

Claim 7 recites the limitation "the green secondary emission" in the second line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, claim 1 is rendered unclear and indefinite because the D.sub.c is not clearly defined in the empirical formula. For examination purposes, the Examiner will take D.sub.c to mean europium (Eu).

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Further regarding claim 1, it is unclear as to what the term “high temperature-stable modification HT” is referring to. Since HT stands for high temperature the limitation is redundant and it is unclear as to what is actually being referred to.

Regarding claims 1-17, claims 1-17 are rendered unclear and definite due to the phrase “in particular”. The phrase "in particular" is unclear as to whether the limitations following the phrase are a part of the claimed invention. For examination purposes, the Examiner will assume that the limitations following the phrase "in particular" are not limitations in any sense and are not germane to the issue of patentability.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation of the first LED emitting from 340 to 470 nm, and the claim also recites in particular at least 420, which is the narrower statement of the range/limitation.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 7-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Delsing et al. (EP 1,413,618).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Delsing discloses a high-efficiency LED-based illumination system in figure 1 with improved color rendering, simultaneously exploiting the color-mixing principle of blue, green and red (RGB mixing) (paragraph 2) and the principle of converting a primary radiation emitted by an LED into light with a longer wavelength by means of a phosphor which at least partially absorbs this radiation, at least two LEDs being used, of which a first LED emits primarily in the range from 340 nm to 470 nm (peak wavelength) (paragraph 4), in particular at least 420 nm, and a second LED emits in the red region at 600 to 700 nm (peak wavelength) (paragraphs 2 and 12), wherein the green component is produced by the primary radiation of the

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first LED being at least partially converted by a green-emitting phosphor, the green-emitting phosphor used being a phosphor from the class of the oxynitridosilicates, having a cation M and the empirical formula  $M_{1-c}Si_2O_2N_2D_c$ , where M comprises Sr as a constituent and  $M = Sr$  alone or  $M = Sr_{1-x-y}Ba_yCa_x$  with  $0.1 \leq x+y < 0.5$  being used (paragraph 2), and the oxynitridosilicate completely or predominantly comprising the high-temperature-stable modification HT.

Regarding claim 2, Delsing discloses the illumination system as claimed in claim 1, wherein the system contains groups of LEDs of the same type (see FIG. 2).

Regarding claim 3, Delsing discloses the illumination system as claimed in claim 1, wherein three LEDs or groups of LEDs are used (see FIG. 2), the primary radiation of the first LED being completely converted into green secondary emission (paragraph 4), with a third LED emitting blue light, in particular with a peak wavelength in the range from 430 to 470 nm (paragraph 4).

Regarding claim 7, Delsing discloses the illumination system as claimed in claim 1, wherein the green secondary emission has a dominant wavelength in the range from 550 to 570 nm (paragraph 4).

Regarding claim 8, Delsing discloses the illumination system as claimed in claim 1, wherein in the oxynitridosilicate the Eu fraction makes up between 0.1 and 20 mol % of M (paragraph 7).

Regarding claim 9, Delsing discloses the illumination system as claimed in claim 1, wherein Sr represents the majority of M and a proportion of M, in particular up to 30 mol %, is replaced by Ba and/or Ca (see Table 1).

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Regarding claim 10, Delsing discloses the illumination system as claimed in claim 1, wherein a proportion of M, in particular up to 30 mol %, is replaced by Li and/or La and/or Zn and/or Na and/or Y (paragraph 7).

Regarding claim 11, Delsing discloses the illumination system as claimed in claim 1, wherein part of the group SiN in the oxynitridosilicate of formula  $MSi_{0.2}O_{0.2}N_{0.2}$ , in particular up to 30 mol %, is replaced by the group AlO (see Table 1).

Regarding claim 12, Delsing discloses the illumination system as claimed in claim 1, wherein a proportion of Eu, in particular up to 30 mol %, is replaced by Mn (paragraph 7).

Regarding claim 13, Delsing discloses the illumination system as claimed in claim 1, wherein the primary radiation source used is a light-emitting diode (item 1) based on InGaN with a peak wavelength in the range from 420 to 470 nm, in particular with its peak wavelength in the range from 440 to 465 nm (paragraph 10).

Regarding claim 14, Delsing discloses the illumination system as claimed in claim 1, wherein the color mixing using the RGB principle realizes a white-emitting illumination system with a color temperature of from 2500 to 5000 K, in particular 3500 to 5000 K (paragraph 1 and see FIGS. 3-5).

Regarding claim 15, Delsing discloses the illumination system as claimed in claim 1, wherein a plurality of light-emitting components are arranged in a cavity (see FIG. 2), in particular a luminescence conversion LED which imparts blue and green components of the emission simultaneously and an LED which imparts red components of the emission directly.

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Regarding claim 16, Delsing discloses the illumination system as claimed in claim 1, wherein the full width at half maximum of the oxynitridosilicate is less than 90 nm, preferably less than 80 nm (see FIGS. 3-5).

Regarding claim 17, Delsing discloses the illumination system as claimed in claim 1, wherein the system includes electronics for actuating individual LEDs or groups of LEDs (see FIG. 2 and paragraph 12).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delsing et al. (EP 1,413,618) in view of Maas et al. (US 6,539,656).

Regarding claim 4, Delsing discloses the illumination system as claimed in claim 1, but does not expressly disclose that the system includes control electronics which impart dimmability or targeted controllability of properties of the system, such as the luminous color, as claimed by Applicant. Maas is cited to show an illumination system in figure 2, which uses control electronics (column 2, lines 42-56). Maas teaches that by using control electronics, the system can have a high attention value for lighting (column 2, lines 42-56).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Delsing's invention to include the system including control



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electronics which impart dimmability or targeted controllability of properties of the system, such as the luminous color as suggested by Maas for having a high attention value of the lighting.

Regarding claim 5, the combined reference of Delsing and Maas disclose the illumination system as claimed in claim 3, wherein the system includes control electronics which control the brightness of the individual LEDs or groups of LEDs individually (Maas; column 2, lines 42-56), so that a tunable illumination system is formed for a range of color temperatures which covers at least 1000 K within a band from 2500 to 5000 K (Delsing; see FIGS. 3-5), with an Ra of at least 85, in particular at least 90, for each selected color temperature within the selected range.

Regarding claim 6, the combined reference of Delsing and Maas disclose the illumination system as claimed in claim 1, wherein precisely two LEDs or groups of LEDs are used (Delsing; paragraph 4), the primary radiation of the first LED being only partially converted into green secondary emission (Delsing; paragraph 4), in which case both the green component and the blue component are emitted by the first LED (Delsing; paragraph 4).

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012.

The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

nkW

/Natalie K Walford/

Examiner, Art Unit 2879

/NIMESHKUMAR D. PATEL/

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